IN THE CLAIMS:

1. (Previously Presented) A process for producing solid energetic materials,

said process utilizing sol-gel chemistry including the extraction of a liquid phase from a gel and incorporating at least one energetic material during at least one of a solution formation, a gelation of the solution, and the extracting of liquid from the gel, whereby producing a solid energetic material, wherein the energetic material includes a fuel and an oxidizer.

2.-25. (Cancel)

26. (Previously Presented) A process for producing solid energetic material which includes a volume of chemical energy,

said process being carried out using sol-gel processing including extraction of a liquid phase from a gel, and wherein said sol-gel processing is carried out using energetic materials selected from the group consisting of PETN, RDX, HMX, CL-20, TNT, and a ammonium perchlorate, whereby producing a solid energetic material.

27. (Original) The process of Claim 1, wherein utilizing sol-gel chemistry is carried out utilizing a methodology consisting of solution addition to crystallize the energetic materials within pores of a sol-gel derived solid.

28. (Original) The process of Claim 1, wherein utilizing sol-gel chemistry is carried out utilizing a methodology consisting of solution exchange involving exchanging the liquid phase after gelation with another liquid containing an energetic material constituent, thereby allowing deposition of the energetic material constituent within the gel.

29. (Original) The process of Claim 1, wherein utilizing sol-gel chemistry is carried out utilizing a methodology consisting of powder/particle additions involving mixing a particulate form of an energetic constituent with a pre-gel solution or adding to a pre-made gel resulting in a

composite of gel and suspended particles.

30. (Original) The process of Claim 1, wherein utilizing sol-gel chemistry is carried out utilizing a methodology consisting of a functionalized solid network which includes utilizing reactive monomers which have functionalized sites dangling throughout the solid network after gelation, and controlling the number of functionalized sites while ensuring homogeneity at a molecular level.

31. (Original) The process of Claim 1, wherein utilizing sol-gel chemistry is carried out utilizing a methodology consisting of a functionalized energy network involving functionalizing energetic material constituent molecules so that they are reacted in solution to directly form a three-dimensional solid (gel) which incorporates the energetic molecules at a finest scale.

32. (Previously Presented) A process for producing solid energetic materials utilizing sol-gel chemistry, said process comprising a micron to sub-micron (nano) composite of higher performance energetic materials which includes making solid energetic composite materials in which a skeletal structure and void spaces and the surrounding phase contains fuels, oxidizers, or other energetic composite materials.

33. (Original) The process of Claim 27, wherein the solution addition methodology additionally includes:

dissolving energetic materials in a solvent which is compatible with a reactive monomer;

mixing the dissolved energetic materials into a pre-gel solution;

causing gelation of the solution wherein the energetic material is uniformly distributed within pores of a solid network formed by the polymerization of the reactive monomer; and

allowing deposition of the energetic material within the gel.

34. (Original) The process of Claim 28, wherein the solution exchange methodology additionally includes:

forming a solution;

causing gelation of the solution;

after gelation, exchanging the liquid phase with another liquid which contains an energetic material constituent; and

allowing deposition of the energetic material constituent within the gel.

35. (Original) The process of Claim 29, wherein the powder/particle addition methodology additionally includes:

providing an energetic material in powder or particulate form;

either mixing the powder or particulate energetic material with a pre-gel solution or adding to a pre-made gel, thereby resulting in a composite of gel and suspended particles.

36. (Original) The process of Claim 30, wherein the functionalized solid network methodology additionally includes:

after gelation using the reactive monomers having functionalized sites dangling throughout the solid network;

dissolving an energetic material in mutually compatible solvents and diffusing into the gel which allows the energetic material to react and bind to the functionalized site; and

controlling the amount of energetic material by the number of functionalized sites while ensuring homogeneity at the molecular level.

37. (Original) The process of Claim 31, wherein the functionalized energetic network methodology additionally includes:

providing energetic material constituent molecules;

functionalizing the energetic material constituent molecules; and

functionalizing the energetic material constituent molecules so that they can be reacted in solution to directly form a three-dimensional solid or gel network which incorporates the energetic material molecules at the finest scale.

38. (Original) The process of Claim 37, wherein the solid network is the energetic material and controls the concentration by co-reacting with other inert reactive monomers.

39. (Cancel)

40. (Previously amended) The process of Claim 32, additionally including forming conductive gels which form the skeletal structure and void space, and utilizing the skeletal structure as substrates for the electrochemical precipitation of metal fuels.

41. (Previously amended) The process of Claim 32, additionally including depositing metals with the skeletal structure and void spaces via decomposition from the liquid or gas phase of the process.

42. - 44. (Cancel)

45. (Previously Presented) A process for producing solid energetic materials which includes:

forming a solution;

gelation of the solution;

extracting liquid from the gel by the technique selected from the group consisting of controlled slow evaporation of the liquid phase of the gel and supercritical extraction of the liquid phase of the gel; and

incorporating at least one energetic material constituent during at least one of the solution formation, the gelation of the solution, and the extracting of liquid from the gel, and

producing a solid energetic material comprising at least one of an explosive, a propellant, and a pyrotechnic.